

REMARKS

Claims 1-12, 14, 16, 23-28, 30-36, and 38-40 are pending in the above-identified application. Claims 1, 11, 24 and 32 are independent. Claims 39 and 40 are new.

CLAIM REJECTION - 35 U.S.C. § 102

Claims 1, 2, 5-8, 11, 23-38 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Klein (U.S. Patent No. 4,399,711). Applicant respectfully traverses this rejection.

SUMMARY OF THE PRESENT INVENTION

The present invention, in a preferred embodiment, relates to a liquid sampler and an associated blood analyzer using the same. Applicant's invention is an improvement over previous analyzers and is of a smaller size, lower cost, and produces more accurate sampling of a very small volume on the order of 2 microliters (Specification, page 3, lines 18-21). In particular, since a pipette and a metering pump are directly connected to each other in a unitary relation without an intervention of a tube as a liquid sampler, the metering accuracy can be improved without expansion and contraction of the tube. Further the unitary arrangement of the pipette and metering pump prevents a change in the positional relationship between pipette and metering pump thereby improving metering accuracy. Finally, the unitary arrangement allows for a size reduction and cost reduction (see paragraph bridging pages 24 and 25).

Klein

Klein discloses an automated pipette capable of quantitative pickup and delivery of liquid. It operates by drawing up a volume of liquid equal to the volume desired plus half of the excess. An example embodiment picks up and delivers 42 microliters by drawing 50 microliters of liquid into a conduit 22 (column 4, lines 6-19).

Klein's automated pipette includes a removable tip portion 21, wherein a tip seal 23 secures removable tip portion to hollow body portion 12 (column 2, lines 36-39).

Differences over Klein

The liquid sampler as claimed in claim 1 includes, among other things, a metering pump including a cylinder having at least one opening (for example, cylinder 12) and a cavity (for example, cavity 13), a piston inserted in the cavity (for example, piston 14), and a driving source for moving the piston (linear actuator 16). The liquid sampler further includes a pipette directly connected to one of the openings of the cylinder (pipette 18). Applicant submits that Heidt fails to teach or suggest at least the claimed pipette directly connected to one of the openings of the metering pump's cylinder. This argument applies as well to the analyzer of claims 11, 24, and 32.

Because Klein shows a tip seal 23 securing the removable tip portion 21 to hollow body portion 12, Applicant submits that Klein fails to teach or suggest the claimed pipette directly connected to the other opening of the

cylinder. For at least this reason, Applicant respectfully requests that the rejection be withdrawn.

In addition, claim 24 as amended further recites "a reagent cassette holder for holding a reagent cassette that stores plural types of reagents in a detachable manner." Applicant submits that Klein fails to teach this limitation, as well.

In addition, claim 32 further recites "a detecting cassette holder for holding a detecting cassette in a detachable manner." Applicant submits that Klein fails to teach this limitation, as well.

Accordingly, Applicant respectfully requests that the rejection be withdrawn.

Claim Rejection – 35 U.S.C. 103: JP 2-080937A

Claims 3 and 4 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Klein in view of JP 2-080937A. JP 2-080937A is relied on for teaching the claimed supplying a cleaning liquid into the cavity, and for controlling the supply thereof. However, JP 2-080937A does not at least make up for the deficiency in Klein. Thus, at least for the reasons above for claim 1, Applicant submits that all claimed elements are not taught or suggested by Klein and JP 2-080937A, either alone or in combination.

In addition, claim 3 is directed to the liquid sampler as set forth in claim 1 wherein the cylinder has a channel extending from an outer circumference thereof to the cavity for supplying a cleaning liquid into the cavity.

JP 2-080937A discloses a flow cell chamber including a piping 11 for supplying a sheath fluid and an excess-sample discharging piping 15 for discharging a sample liquid that has not been used. JP 2-080937A also discloses as a pipette-dispensing device, a probe 2.

Thus, since the probe 2 does not include a passage for cleaning liquid to flow, unlike JP 2-080937A, the present invention includes a cylinder extending to the cavity of the metering pump cylinder for supplying a cleaning liquid into the cavity. Thus, Applicant that at least for this additional reason, the rejection fails to establish *prima facie* obviousness for claim 3.

Further with respect to claim 4, Applicant submits that JP 2-080937A does not teach the claimed electromagnetic valve for controlling the supply of the cleaning liquid. Thus, at least for this additional reason, Applicant submits that the rejection fails to establish *prima facie* obviousness for claim 4.

Claim Rejection – 35 U.S.C. 103: JP 09-133686A

Claims 9 and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Klein in view of JP 09-133686A.

The Office Action states that Klein teaches the claimed invention except for a liquid surface detection circuit. JP 09-133686A is relied on for teaching the claimed liquid surface detecting section. However, for the same reason in the above for claim 1, Applicant submits that Klein fails to teach at least the claimed liquid sampler comprising a metering pump including a cylinder having opposite end openings and a disposable pipette attached to the other opening of the cylinder in a detachable manner, i.e., unitary relation between

the metering pump and the pipette. JP 09-133686A does not at least make up for that deficiency in Klein. Thus, at least for the same reasons as above for claim 1, Applicant submits that all claimed elements of claims 9 and 10 are not taught or suggested by Klein and JP 09-133686A, either alone or in combination.

Claim Rejection – 35 U.S.C. 103: JP 09-133686A and Kogo

Claim 12 has been rejected under 35 U.S.C. 103 as being unpatentable over Klein in view of Kogo et al. (U.S. Patent 4,891,575, hereinafter Kogo). Kogo is relied on for teaching the claimed detection section. However, Applicant submits that Kogo does not at least make up for the deficiency in Klein. Thus, at least for the reasons above for claim 11, Applicant submits that the rejection fails to establish *prima facie* obviousness for claim 12.

Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 14 and 16 would be allowed if re-written into independent form.

New Claims

Claims 39 and 40 have been added. Claim 39 is directed to wherein the piston moves such that a volume of liquid drawn or delivered by the liquid sampler is substantially 2 μ L. Unlike Klein, the present invention is capable of sampling very small volume. Claim 40 is directed to wherein the stepping motor moves the piston 0.00635mm for each step of stepwise rotation of the

stepping motor. Such a feature enables sampling a very small volume. Klein does not disclose such a feature.

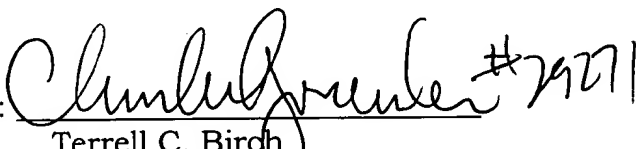
CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert W. Downs (Reg. No. 48,222) at the telephone number of (703) 205-8000, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully Submitted,

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